

Temperature sensors

Reliable monitoring for
any application



SENSIRION

Tested and proven worldwide

Our high-accuracy digital temperature sensors are based on Sensirion's CMOSens® Technology, which combines the strengths of standard CMOS production processes and advanced MEMS technology on a single silicon chip. The working principle behind all STSxx temperature sensors is a silicon bandgap thermometer.

In-house sensor calibration and testing infrastructure enables efficient processes that comply with established quality standards. Each sensor is individually calibrated and tested for quality and accuracy. The high reliability of our sensors has been proven by more than half a billion sensors in the field over more than ten years. Additionally, it is guaranteed through a rigorous qualification based on the AEC-Q100 automotive standard.

SEK-STSxx evaluation kit Straightforward sensor evaluation

The STSxx Evaluation Kit (SEK) is designed to facilitate seamless sensor evaluation. With plug-and-play hardware and the ControlCenter viewer software, the SEK offers a straightforward and efficient testing process. It provides an essential tool for assessing sensor performance. Note that while all STSxx EKs operate similarly, each kit caters to different sensor variants.

- Quick, easy, cost-efficient sensor evaluation
- Kit content: 3 sensor samples, on FPCB, RJ45 adapter cable (1 meter length)
- ControlCenter: displays and logs signals for multiple sensors on one PC
- SensorBridge required (must be bought separately)



Learn more



about the
SEK-STSxx

STS4x

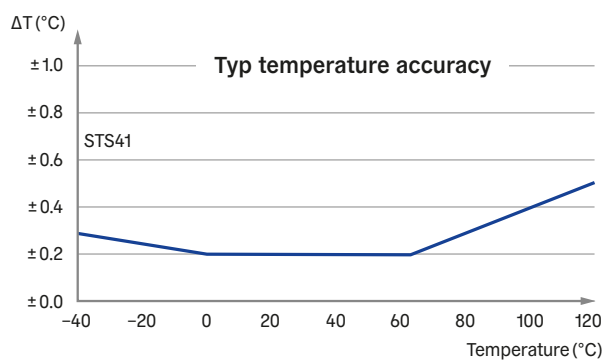
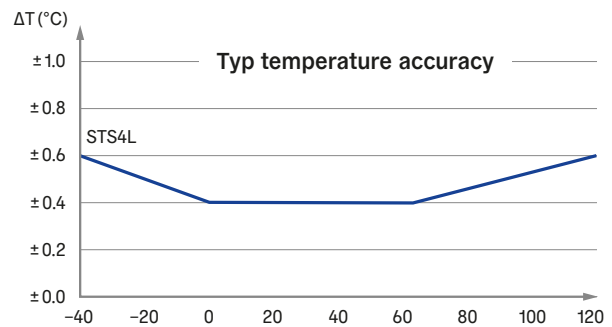
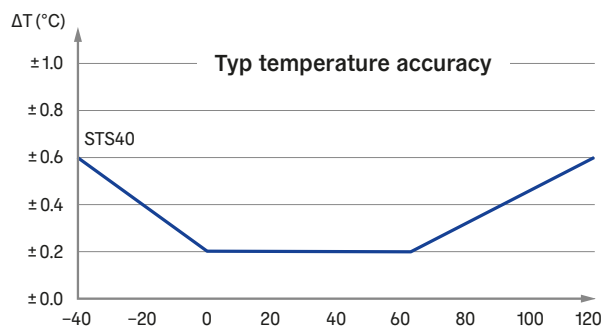
The STS4x is our state-of-the-art, highly accurate digital temperature sensor series, boasting industry-leading lead times. It is a cost-efficient platform that is available in different accuracy classes. Designed for mass production, it comes with a high signal-to-noise ratio, high process capability and is proven to be reliable and stable over the long term.



Features	Benefits
Available in multiple accuracy ranges	Adaptability and cost-effectiveness
Four-pin DFN packaging	Suitable for standard SMD assembly processes
Compact footprint of only $1.5 \times 1.5 \times 0.55 \text{ mm}^3$	Ideal for high-volume applications
Available in different I ² C addresses	Flexible integration into complex architectures
Wide supply voltage range (1.08-3.6 V), low current consumption (0.4 μA)	Enables battery-driven designs

Applications

- Wearable fitness and activity monitors
- Weather stations
- Smart home devices
- Mobile phones, laptops, tablets
- Cold chain and data loggers
- HVAC systems



about the
STS4x

STS4xA

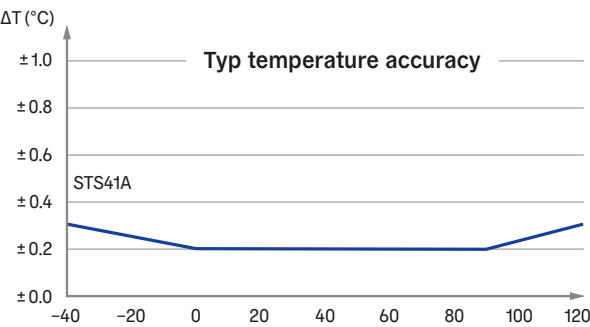
The STS4xA is our upcoming highly reliable, automotive-grade digital temperature sensor series. Its robust DFN housing comes with the option of wettable flanks pack-aging to support automated optical inspection (AOI). Moreover, the integrated on-chip heater enables advanced on-board diagnosis (OBD) and ensures full functionality in condensing environments.



Features	Benefits
AEC-Q100 qualified	Guaranteed high reliability through automotive standard
Robust DFN housing with optional wettable flanks	Facilitated integration and inspection
Compact footprint of only $1.5 \times 1.5 \times 0.6 \text{ mm}^3$	Ideal for high-volume applications
Included power heater	Advanced self-diagnosis capabilities
Fully functional in condensing environments	Best-in-class temperature accuracy
Available in three I ² C-address versions and PWM	Communication and interfacing flexibility

Applications

- Anti-fogging detection module
- Thermal runaway monitoring
- Steer-by-Wire and Break-by-Wire
- Onboard HVAC systems



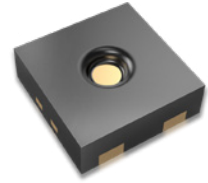
Learn more



about the
STS4xA

SHT43

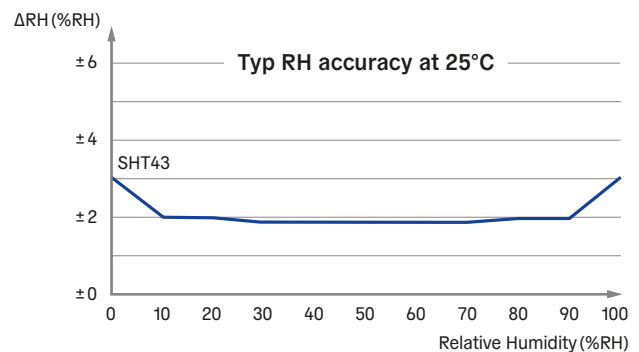
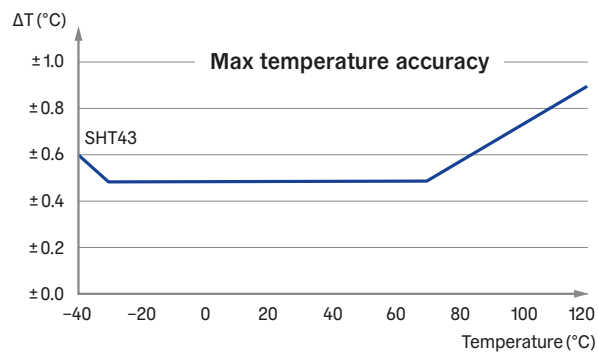
The ISO17205 certified temperature and humidity sensor SHT43 is the successor to the temperature sensors STS32 and STS33. It offers unmatched price-performance with outstanding temperature and humidity sensing and the ideal combination of high accuracy and low power consumption. Calibration certificates and data for full reels and each individual SHT43 can be downloaded from libellus.sensirion.com.



Features	Benefits
Four-pin DFN packaging	Suitable for standard SMD assembly processes
Compact footprint of only $1.5 \times 1.5 \times 0.54 \text{ mm}^3$	Ideal for high-volume applications
ISO17025 temperature calibration certificate on-demand	Enables tracking applications (cold chain, pharmaceuticals, and asset tracking)
Available in different I ² C addresses	Flexible integration into complex architectures
Up to 0.08 °C temperature accuracy between 32 and 42 °C	Higher accuracy in body temperature range
Wide supply voltage range (1.08-3.6 V), low current consumption (0.4 µA)	Enables battery-driven designs

Applications

- Wearable fitness and activity monitors
- Weather stations
- Smart home devices
- Mobile phones, laptops, tablets
- Core-body and skin temperature sensing
- Trackers and data loggers



Learn more



about the
SHT43

Temperature sensor	STS4L	STS40	STS41 ⁴	STS41A ⁴	STS30	STS31	STS35	STS32 (NRND) ⁵	STS33 (NRND) ⁵	SHT43 (successor)
Typical accuracy (°C)	± 0.4 (0 to 65)	± 0.2 (0 to 65)	± 0.2 (0 to 65)	± 0.2 (0 to 90)	± 0.2 (0 to 65)	± 0.2 (0 to 90)	± 0.1 (20 to 60)	–	–	–
Maximum accuracy (°C)	± 0.6	±0.4	± 0.4	± 0.4	± 0.4	± 0.4	± 0.3	± 0.4	± 0.48	± 0.48
Typ. long-term drift (°C/y)	< 0.03			< 0.03	< 0.03			< 0.01		< 0.01
Operating range (°C)	– 40 to +125			– 40 to +125	– 40 to +125			– 40 to +125		– 40 to +125
Response time τ63% (s) ¹	2			2	> 2			> 2		2
Electrical										
Interface	I ² C FM+			I ² C FM+	I ² C FM			I ² C FM		I ² C FM+
Number of addresses available	3			3	2			2		2
Supply voltage range (V)	1.08 to 3.6			1.08 to 3.6	2.15 to 5.5			2.15 to 5.5		1.08 to 3.6
Measurement duration (ms) ²	1.3 (low) 6.9 (high)			1.3 (low) 6.9 (high)	2.5 (low) 12.5(high)			2.5 (low) 12.5(high)		1.3 (low) 6.9 (high)
Avg current consumption (µA) ³	0.4 (low) 2.2 (high)			18 (low) 20 (high)	1.7 (low)			1.7 (low)		0.4 (low) 2.2 (high)
Idle current (µA)	0.08			18	0.2			0.2		0.08
Other										
Size	1.5 × 1.5 × 0.55 mm ³			1.5 × 1.5 × 0.6 mm ³	2.5 × 2.5 × 0.9 mm ³			2.5 × 2.5 × 0.9 mm ³		1.5x1.5 × 0.54 mm ³
ISO17025 certification	no			no	no			yes		yes
Wettable flanks	no			yes	no			no		no

Please note that above values are of indicative value only.

For detailed information please consult the respective datasheets.

¹ Temperature response times very much depend on thermal conductivity of the substrate material of the sensor.

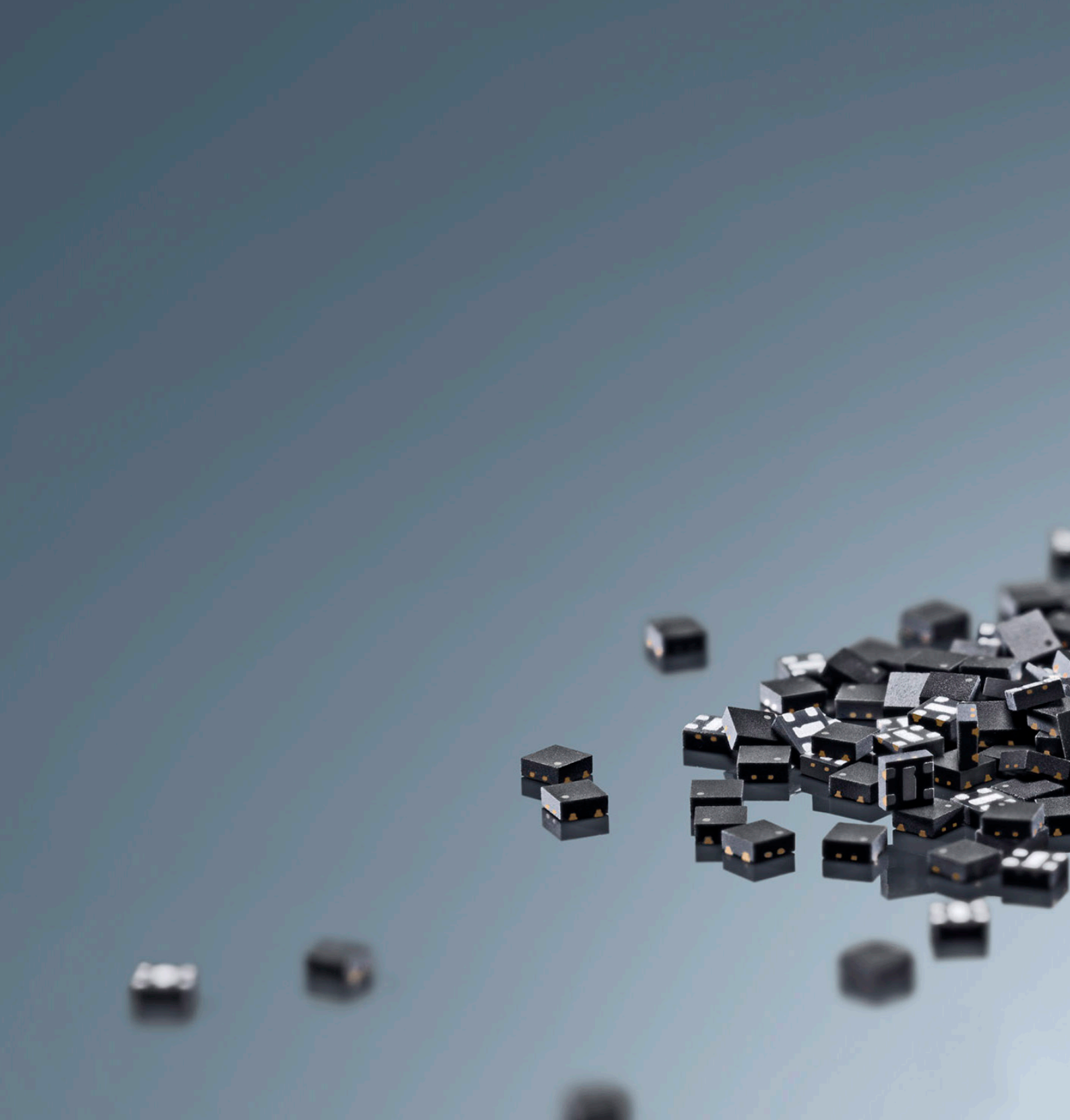
² Different measurement modes possible (differing either in resolution or repeatability).

“High” indicates a measurement with the highest precision/power mode (highest resolution, best repeatability), “low” indicates a measurement with the lowest precision/power mode (lowest resolution, least repeatability).

³ Values for one T measurement per second VDD = 3V; different measurement modes possible (differing either in resolution or repeatability)

⁴ This product is upcoming and not available for purchase yet. For more information, please consult our sales team.

⁵ This product is not recommended for new designs. Please refer to the successor product SHT43.



Technology at heart,
future in mind.